REMARKS

Claims 1-23 are rejected in the present Office Action dated October 3, 2003. In this response, the applicants have amended claims 1-2 and 4-23, and have added claims 24-26. Accordingly, claims 1-26 are pending in the present application. The applicants respectfully request reconsideration of the present application in view of the foregoing amendments and following reasons. A separate petition for a one-month extension of time accompanies this amendment.

In the Office Action, claims 4, 21, and 22 were rejected under 35 U.S.C. § 112, second paragraph, and claims 1-23 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,493,825 to Blumenau et al. The applicants have amended the claims in response to the rejections under 35 U.S.C. § 112 and respectfully traverse the rejections under 35 U.S.C. § 102(e).

The applicants' representative thanks Examiner Volper for his telephonic interview on November 10, 2003. During the interview, the parties discussed Blumenau et al. (U.S. Patent No. 6,493,825), claim 1 of the applicants' application, and embodiments of the invention. Further details regarding the substance of the interview may be found below. If Examiner Volper needs any additional information regarding the interview, he is requested to contact the undersigned attorney.

Claim 1 has been amended to, *inter alia*, recite the use of a virtual connection manager and virtual connection cache. Claims 2-23 have been amended to correct obvious typographical errors and informalities, and to improve readability. Claims 24-26 have been added to more fully claim the disclosed invention.

The Applicants' Technology

The applicants' technology is directed to, *inter alia*, establishing a virtual private storage area network ("SAN") between a host initiator device and a logical and/or physical target device. As shown in Figure 1 of the application and reproduced below, the applicants' technology includes an intelligent intermediary between endpoints in a SAN such as between hosts and target devices. These endpoints communicate via a virtual connection manager component of the intermediary.

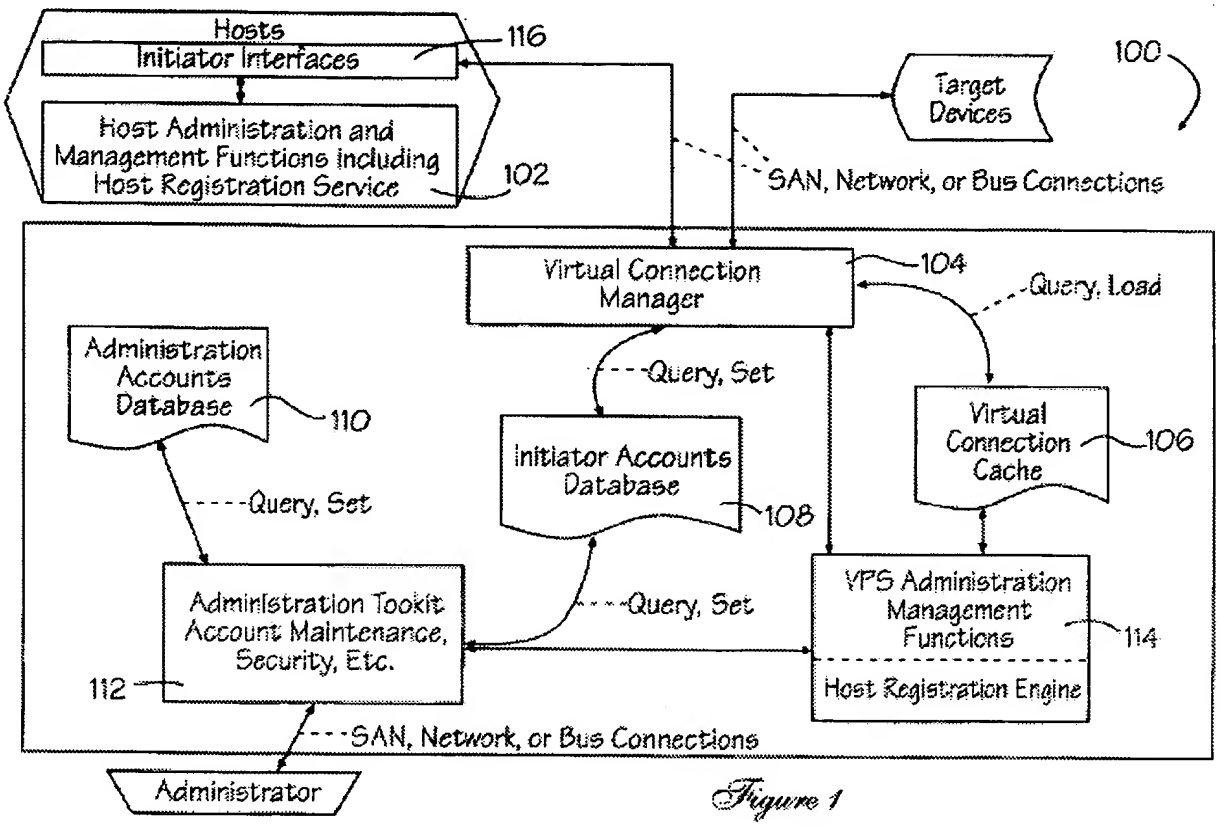

Figure 1

This intermediary functions as a gateway for SAN-related data traffic. Host devices treat the intermediary as a target device and send I/O commands to the intermediary instead of directly to the target device. The intermediary includes a virtual connection manager and a virtual connection cache, and compares source and destination information from the I/O commands to a predetermined list of allowable connections. When the source and destination information matches the predetermined list of allowable connections, the intermediary determines whether a previously established virtual connection exists between the source and destination. It does this by consulting the virtual connection cache. The creation and use of a virtual connection cache is described in the applicants' specification at, e.g., 17:15-20:22. Determining whether a connection already exists includes detecting whether the connection is valid, invalid, or null. When a previously established virtual connection does not exist, the intermediary creates a data connection between the host and storage device. This establishes a virtual private SAN. When a virtual connection already exists, the intermediary uses the virtual private SAN that already exists. This intermediary

architecture additionally enables administration and management functions including host registration, security, encryption, compression, etc. (See specification at 14:1-14.)

Using a virtual connection cache also makes it unnecessary to query an account or access database every time an I/O request is handled, or set up a connection that already exists. Using a virtual connection cache enables the system to operate more quickly than without the cache.

The use of virtual connections also offers a level of security beyond that offered by the devices themselves as described in the applicants' specification at, e.g., 18:15-22. As described therein, when a connection is first created as a result of receiving an I/O request, a connection manager queries an account database. The connection manager may add an indication in the virtual connection cache of whether the connection is invalid (e.g., because the initiator does not have sufficient permissions to access the target device). Thereafter, the virtual connection manager needs to only query the virtual connection cache.

The Blumenau Reference

The Blumenau reference is directed to authenticating a host processor that requests service from a storage device in a data processing network. This technique authenticates endpoints of a network by evaluating whether data is correctly encrypted with a pre-assigned encryption scheme. In this technique, hosts are directly networked to storage subsystems (i.e., target devices) as illustrated in Figure 22 of the reference, which is reproduced below.

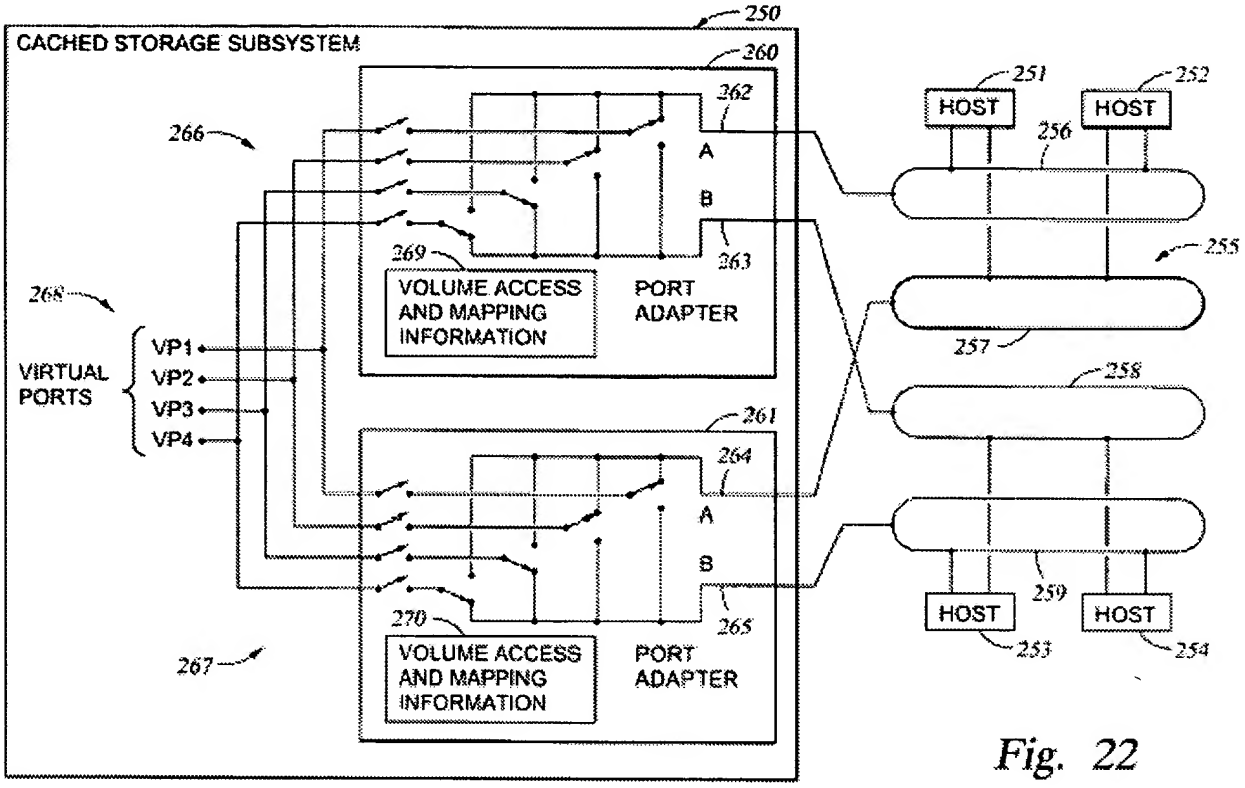

Fig. 22

As described in the Blumenau reference, "each of the hosts... [has] a respective host controller... for each host port [that is] directly linked to the port adapter." (Blumenau, 11:28-31.) Each port adapter provides data ports to the network. (See Blumenau at 6:14-15.) Thus, hosts are directly connected to target devices without use of an intelligent intermediary.

In this technique, hosts connect to target devices through virtual ports and switches that are mapped to physical ports and switches. Ports and switches are defined by Blumenau as "virtual" when they do not appear as physical devices in the network. (See Blumenau at 22:61-23:19.) By using virtual ports and switches, a physical device can be disconnected from a network and an alternate physical device can be substituted for the disconnected device without changing the Worldwide Name (WWN) or Logical Unit Number (LUN) associated with the devices. (See Blumenau at 23:2-36.)

Analysis

The applicants' technique is different from the technique described in the Blumenau reference in several important ways. A first difference is that the applicants' technique uses an intelligent intermediary having a virtual connection manager and a virtual connection cache to perform the disclosed functions, but the Blumenau reference neither teaches nor suggests the use of an intermediary. In contrast, in the Blumenau reference, endpoints communicate directly with one another without an intermediary.

A second difference is that unlike the Blumenau reference, the applicants' technique does not use virtual ports or virtual switches. The applicants' technique creates a virtual connection by using a virtual connection manager. During the telephone interview, the Examiner suggested that Blumenau's "virtual ports" or "virtual switches" could be considered to be equivalent to the applicants' "virtual connections." The applicants respectfully disagree for at least the following reasons. First, virtual ports and switches are not the same as virtual connections. A virtual connection represents a connection between a specific host initiator and a specific logical or physical target device. (See specification at 17:19-22.) In contrast, as described above, virtual ports or switches are used to connect hosts to alternate storage devices.

Moreover, a connection is a higher-level construct than a port or switch. I.e., endpoints may use ports or switches when establishing a connection between one another. See, e.g., Blumenau at 7:37-40 ("up to 800 workstations could be connected to the storage subsystem by connecting this single port of each workstation to only one of sixteen loops") and 7:41-43 ("It is possible to replace each of the loops... with a switch, or to use switches together with loops for connecting hosts to the storage subsystem.")

A third point of departure from the Blumenau technique is that in the applicants' technique, the virtual connection manager creates and maintains a virtual connection object in the virtual connection cache for each I/O path of the virtual private SAN. When a host issues an I/O command to the virtual connection manager, the virtual connection manager examines the virtual connection cache to determine whether the command should be forwarded to the target device. A benefit of this technique is that access

information does not need to be checked with every I/O request because the virtual connection cache already has an indication of previously-established connections. In contrast, the Blumenau technique requires checking an access table with every access request. (See Blumenau, Fig. 11.)

As the Examiner knows, to anticipate a claim under 35 U.S.C. § 102, a reference must teach every element of a claim. Blumenau fails to disclose every limitation recited in applicants' claim 1. Thus, for at least the reasons explained above, independent claim 1 is patentable over Blumenau. Dependent claims 2-23 contain the limitations of claim 1 and so are also patenatable over Blumenau.

Newly added claims 24-26 are similar to claim 1 and recite the use of an intermediary to establish a virtual private SAN. Thus, these new claims are patentable for similar reasons to those noted above.

Conclusion

Blumenau neither teaches nor suggests the features recited in independent claims 1 or 24, and thus these claims are allowable. Since these independent claims are allowable, based on at least the above reasons, the claims that depend from them are likewise allowable. If the undersigned attorney has overlooked a relevant teaching in Blumenau or any other reference, the Examiner is requested to point out specifically where such teaching may be found.

In view of the foregoing, the claims pending in the application comply with the requirements of 35 U.S.C. § 112 and patentably define over the applied art. A Notice of Allowance is, therefore, respectfully requested. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-3599.

Respectfully submitted,
Perkins Coie LLP

Date: 1/29/04

Christopher J. Daley-Watson
Registration No. 34,807

Correspondence Address:

Customer No. 25096
Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
(206) 359-8000